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(71) Applicant (for all designated States except US): AR-  
TERICERCA S.A.S. DI UMBERTO AVANZI E C.  
[IT/IT]; Via Moscova, 50, I-20121 Milano (IT).

(72) Inventor; and

(75) Inventor/Applicant (for US only): AVANZI, Umberto  
[IT/IT]; Artericerca S.a.s. di Umberto Avanzi e C., Via  
Moscova, 50, I-20121 Milano (IT).

(74) Agents: PEZZOLI, Ennio et al.; Maccalli & Pezzoli S.r.l.,  
Via Settembrini, 40, I-20124 Milano (IT).

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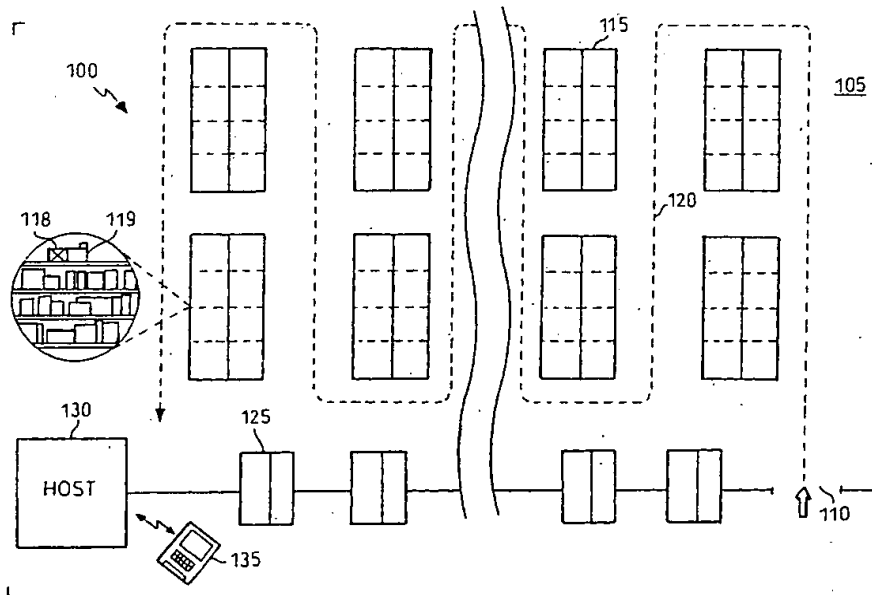
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(54) Title: SYSTEM FOR MAKING PURCHASES AT A SHOPPING CENTRE OF THE SELF-SERVICE TYPE



(57) Abstract: System (100) for making purchases by a customer at a shopping centre of the self-service type (105), comprising means (330) for storing the position of each product on sale in the centre and means (135) for providing a shopping list of products to be purchased; the system further comprises means (320) for determining the position of each product to be purchased and means (135) for providing the customer with an indication of the products to be purchased in an ordered sequence according to a path (120) inside the centre.

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## DESCRIPTION

"System for making purchases at a shopping centre of the self-service type"

The present invention relates to a system for making  
5 purchases at a shopping centre of the self-service type.

In shopping centres of the self-service type, the products are generally arranged on shelves which can be directly accessed by the customers. The customers serve themselves and then pay for the purchases made at a cash  
10 till situated at the exit from the shopping centre.

A problem which is encountered by customers in these shopping centres, in particular if the latter are very large in size (as in the case of supermarkets), consists in the difficulty of identifying the position of each  
15 product to be purchased. This problem becomes even greater in the case of customers who do not regularly frequent the shopping centre; however, this problem is also experienced by regular customers, for example whenever the arrangement of the products on sale is  
20 varied.

A known solution consists in using signs which indicate, for each group of shelves, the category of products arranged on them. The signs are generally hung from the ceiling along a central corridor in the shopping  
25 centre.

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This solution, however, is not particularly satisfactory. In particular, finding the products to be purchased in any case remains a difficult task for the customer, who is obliged to walk slowly around the shopping centre, looking upwards all the time in order to check the information shown on the signs. The product categories used must be necessarily generic, with the result that the customer is not always able to immediately associate the product to be purchased with the corresponding product category. Moreover, this system does not allow the position of certain products which do not fall within a well-defined product category to be identified.

These drawbacks result in a considerable amount of time being wasted by the customer in order to find the products to be purchased. Very frequently the customer realizes that he/she has forgotten one or more products only when in the vicinity of the shopping centre exit so that he/she is obliged to return to the entry area in order to look for these products. In some cases this even results in purchase of the forgotten products being abandoned by the customer. Moreover, the above mentioned difficulties constitute a significant obstacle which dissuades new customers from using the shopping centre.

It is an object of the present invention to overcome

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the above mentioned drawbacks. In order to achieve this object a system as indicated in Claim 1 is proposed.

In short, the present invention envisages a system for making purchases by a customer at a shopping centre of the self-service type, comprising means for storing  
5 the position of each product on sale in the centre and means for providing a shopping list of products to be purchased; the system furthermore comprises means for determining the position of each product to be purchased  
10 and means for providing the customer with an indication of the products to be purchased in an ordered sequence according to a path inside the centre.

Moreover, the present invention also proposes two corresponding methods for making purchases at the  
15 shopping centre, as well as a computer program and a corresponding product program for implementing one of these methods under the control of a shopping centre computer.

Further features and the advantages of the solution  
20 according to the present invention will be made clear by the following description of a preferred embodiment thereof, given purely by way of a non-restrictive indication, with reference to the accompanying figures in which:

25 Fig. 1 shows in schematic form the system for making

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purchases,

Fig. 2 is an elementary block diagram of a palm-top computer supplied to a customer in a supermarket,

Fig. 3 shows the partial contents of a working  
5 memory of a host computer in the supermarket and of the palm-top computer during their operation,

Figs 4a-4b show the flow chart of a method used for making purchases.

With reference in particular to Fig. 1, a system 100  
10 for making purchases at a supermarket 105 is shown. The supermarket 105 covers a large-size closed area (of the order of a few thousand square metres) which is accessed via an entrance 110.

The supermarket is provided with a series of shelves  
15 115 (for example some tens) arranged in pairs opposite each other. A wide range of products on sale in the supermarket 105 are arranged on the shelves 115 (for example food, hygiene, cleaning or similar products). The products on sale are packaged individually and have a  
20 label which provides information relating to the product (such as, for example, name, weight, date of expiry, etc.) and its price. Each shelf 115 is divided into several sectors (four in the example shown in the figure). A signalling lamp 118 and a radio transceiver  
25 119 are positioned above each sector of the shelves 115.

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The shelves are arranged so as to form a central corridor from which various lateral corridors extend opposite each other. Within the supermarket 105 it is thus possible to define a winding path 120 which, starting from the entrance 110, passes in front of each shelf 115. A series of cash tills 125 (for example some tens) allows one to pay for the shopping and then leave the supermarket 105.

The supermarket 105 is equipped with a host computer 130. The host computer 130 is connected by means of a cable to each of the cash tills 125. The computer is also connected via radio to a series of palm-top computers 135, each of which is supplied to a customer in the supermarket 105.

Similar considerations apply in the case of a hypermarket (or any other shopping centre of the self-service type) or in the case where the supermarket has a different structure, for example with the shelves arranged in another way and with a different path along the shelves, etc.

With reference now to Fig. 2, the host computer 130, which is for example a mini-system, is formed of various units which are connected in parallel to a communications bus 205. In particular, a processor ( $\mu$ P) 210 controls the operation of the host computer 130, a working memory 215

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(typically a DRAM) is used directly by the processor 210, and a read-only memory (ROM) 220 contains a basic program for starting the host computer 130. Various peripheral units are further connected to the bus 205 (by means of  
5 respective interfaces). In particular, a mass memory consists of a hard disk 225 and of a driver device (DRV) 230 for reading/writing floppy disks 235. A program for managing the host computer 130 is stored on the hard disk 225; typically, the management program is distributed on  
10 the floppy disk 235 so that it may be installed on the hard disk 225. Finally, the host computer 130 includes an input unit (IN) 240 which consists of a keyboard and a mouse, an output unit (OUT) 245 which consists of a monitor and a printer, and a radio transceiver 250 used  
15 to receive and send messages to each palm-top computer 135.

Similarly, the palm-top computer 135 includes a bus 255 which has, connected to it, a microprocessor ( $\mu$ P) 260, a working memory 265 and a non-volatile memory 270  
20 (typically a flash-type E<sup>2</sup>PROM), which contains a program for controlling the palm-top computer 135. The palm-top computer 135 is also equipped with a liquid-crystal display 275 with which an optical pen 280, a keyboard 285, a bar-code reader 290 and a radio transceiver 295  
25 are associated.

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Similar considerations apply in the case where the host computer and the palm-top computer have a different structure, for example the host computer is equipped with an optical disk (CD-ROM) reader, has a distributed  
5 architecture, for example consisting of a personal computer (PC) network, or the palm-top computer is equipped with a touch-screen, and the like. Alternatively, the program for management of the host computer is supplied on a CD-ROM, is pre-loaded on the  
10 hard disk or is stored on any other medium which can be read by a computer, is sent on a network to the host computer (for example via the Internet) or more generally is supplied in any form which can be directly loaded into the working memory of the host computer.

15 If we now consider Fig. 3, the partial contents of the working memory 215 of the host computer and of the working memory 265 of the palm-top computer during their operation are shown; this information (programs and data) is typically stored on the hard disk or in the E<sup>2</sup>PROM,  
20 respectively, and loaded (at least partly) into the working memory during execution, in addition to an operating system and any other application programs (not shown in the figures).

The working memory 215 of the host computer includes  
25 a driver module (DRV) 310 which physically manages the

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transmission, via radio, of the information with each palm-top computer. The driver module 310 communicates with a supermarket-management module (DW) 315 and with a shopping-management module (SHP) 320. The supermarket-  
5 management module 315 controls a customer database 325 and a product database 330 to which the shopping-management module 320 has access. An acquisition module 335 controls the entry of information relating to new customers in the database 325.

10       The customer database 325 consists of a table of the relational type which contains a record for each customer (accessible via an identification code associated with said customer). The record is composed of a field (CL) which contains information identifying the customer (such  
15 as name, age, profession, serial number of the respective palm-top computer, and the like) and a field (LOG) which contains a log of the purchases made by the customer during a predefined period (for example during the last year).

20       Similarly, the product database 330 consists of a table which contains a record for each product on sale in the supermarket. The record is composed of a field (PRD) which contains information identifying the product, such  
as the product type, the brand, the product bar-code (in  
25 EAN or UPC format or a format specific to the

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supermarket), and the selling price, a field (POS) which contains a coordinate identifying the position of the product in the supermarket, and a field (DL) which contains an indication of special offers associated with the product, together with any discount applied to the selling price. The coordinate which identifies the position of the product consists of a progressive number assigned to the shelves (along the path from the entrance to the cash tills), a sector number and a level number.

10       The working memory 265 of the palm-top computer includes a driver module (DRV) 345 which physically manages the transmission, via radio, of the information with the host computer. The driver module 345 has access to an array 350 which contains a shopping list SL; the driver module 345 controls the contents of two additional arrays 355 and 360 which contain, respectively, an ordered shopping list SSL and a list of special offers AD, and controls the contents of a position variable (POS) 363.

20       A display module 365 has access to the ordered-shopping-list array 355, the special-offers-list array 260 and the position variable 363. The display module 365 communicates with an input module 370 (which drives the optical pen and the keyboard of the palm-top computer) and with a module for driving the bar-code reader 375;

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the input module 370 controls the contents of the shopping-list array 350. The display module 365 also controls an amount-spent variable (TOT) 380. An output module 385 (which drives the display of the palm-top  
5 computer) communicates with the display module 365 and has access to the amount-spent variable 380.

Similar considerations apply in the case where the programs and the data are structured differently, are stored on different processing systems or other functions  
10 are envisaged, and the like.

In order to explain the operation of the system described above, reference is now made to Figs 4a-4b (together with Fig. 3). When a customer wishes to make purchases at the supermarket, a series of routines which  
15 overall form a method 400 are carried out in successive time periods. The method 400 starts with step 405 and then passes to step 410 where the customer (at his/her own home) writes the name of each product to be purchased on the display of the palm-top computer using the  
20 respective optical pen. The text thus entered is analysed by a character-recognition program of the input module 370 and, if the name is included in a predefined list, the product is added to the shopping-list array 350.

When the customer arrives at the supermarket, he/she  
25 fixes the palm-top computer onto a shopping trolley and

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then activates, by means of a corresponding key on the palm-top computer, communication with the host computer. The method then passes to step 420 where the driver module 345 transmits the serial number of the palm-top  
5 computer (read from the E<sup>2</sup>PROM) and the shopping list SL to the driver module 310, which directly supplies this information to the shopping-management module 320.

Passing on to step 423, the shopping-management module 320 determines the customer associated with the  
10 serial number (from the respective field CL of the customer database 325). The shopping-management module 320 then produces an additional list of recommended products for the customer. In particular, the additional list contains the name of the products usually purchased  
15 by the customer (obtained from the contents of the respective field LG of the customer database 325) and not included in the shopping list SL; the additional list also contains the name of the products on special offer (obtained from the contents of the fields DL of the  
20 product database 330) which may be of interest to the customer (determined on the basis of the personal details of the customer, obtained from the respective field CL of the customer database 325).

If we now consider step 425, the shopping-management  
25 module 320 obtains (from the respective fields POS and DL

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of the product database 330) the coordinate and any special offer (together with the corresponding discount) associated with each product to be purchased included in the shopping list SL and with each recommended product  
5 included in the additional list. The shopping list and the additional list thus modified are then arranged in order, in step 430, according to the path inside the supermarket (from the entrance to the cash tills), so as to obtain the corresponding ordered shopping list SSL and  
10 the corresponding list of special offers AD.

The method then proceeds to step 435 where the ordered shopping list SSL and the list of special offers AD are supplied to the driver module 310 which transmits them to the corresponding driver module 345; the driver  
15 module 345 stores the ordered shopping SSL and the list of special offers AD in the array 355 and array 360, respectively. Passing to step 437, the position variable 363 is set to a predefined value associated with the supermarket entrance and the amount-spent variable 380 is  
20 set to a zero value both as regards the total purchase amount and as regards the total savings resulting from the discounts. The total purchase amount and the total savings are then shown to the customer on the display of the palm-top computer by the output module 385.

25 Continuing to step 440, the palm-top computer

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determines its current position inside the supermarket (and therefore also the position of the customer). In particular, each transceiver arranged on the shelves continuously transmits a signal indicating its position; 5 this signal is transmitted selectively to the respective corridor within a radius of a few metres (for example 2 metres), so as not to interfere with the signals transmitted by the other transceivers. The driver module 345 checks whether a signal sent by the transceivers is 10 available; if this is the case, the driver module 345 correspondingly updates the position variable 363.

The method then proceeds to step 450, where the display module 365 determines the product in the ordered list SSL or the list of special offers AD which is 15 closest, along the path inside the supermarket (in both directions), to the current position of the palm-top computer (by means of a comparison between the respective coordinates and the position variable 363). The name, the coordinate and any special offer associated with the 20 current product thus determined are extracted from the ordered-shopping-list array SSL or from the special-offers-list array AD and sent to the output module 385 so as to be shown on the display of the palm-top computer. In the case where the current product is included in the 25 list of special offers AD (and not in the ordered

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shopping list SSL), this information is displayed in a different format (for example with the addition of a flashing advertisement reminding the user of the opportunity to purchase the recommended product).

5       The method then passes to step 460 where different operations are carried out in response to any action performed by the customer.

In particular, if the customer has not performed any action, the method returns directly to step 440.

10       If, however, the customer has selected a request for signalling the position of the current product (by means of a corresponding key on the palm-top computer), the method passes to step 465 where the coordinate of the current product is supplied to the driver module 345  
15       which transmits a corresponding signal within a radius of 10 metres or so. Each transceiver arranged on the shelves and receiving this signal checks whether the coordinate of the current product falls within its sector; if this is so, the transceiver activates (for a few seconds) the  
20       associated signalling lamp. The method then returns to step 440.

If the customer has chosen the product to be purchased, this product is removed from the shelf and the bar code shown on its packaging is read by means of the  
25       reader of the palm-top computer in step 470. The bar-

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code-reader driver module 375 sends the value read to the display module 365 which correspondingly updates the ordered-shopping-list array 355 or the special-offers-list array 360. At the same time, the total purchase  
5 amount and the total savings in the amount-spent variable 380 (which are shown to the customer on the display of the palm-top computer) are also updated. The method then passes to step 480 (described below).

If the customer has decided not to purchase the  
10 current product and to erase it from the ordered shopping list SSL or list of special offers AD (by means of a corresponding key on the palm-top computer), the method passes to step 473 where the display module 365 correspondingly updates the array 355 or the array 360.  
15 The method then passes to step 480.

Finally, if the customer has decided to postpone purchase of the current product to a later time, for example owing to a queue at the shelf, the method continues to step 475 where the current product is put on  
20 hold (by means of a corresponding key on the palm-top computer). The display module 365 correspondingly updates the ordered-shopping-list array 355 or the special-offers-list array 360. The method then passes to step 480.

25 If we now consider step 480, it is checked whether

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further products exist in the ordered-shopping-list array 355 or in the special-offers-list array 360. If the answer is YES, the method returns to step 440. If the answer is NO, the method proceeds to step 485 where it is  
5 checked whether there are products on hold (both in the ordered-shopping-list array 355 and in the special-offers-list array 360). If the answer is YES, these products are restored to the normal state (correspondingly modifying the array 355 or the array  
10 360) and the method returns to step 440 in order to repeat the operations described above.

If the answer is NO, i.e. if there is no product on hold, the method continues to step 490 where the customer goes to the cash till in order to pay for the shopping  
15 (by means of cash, credit card or debit card); the information relating to the products purchased is also transmitted (by means of the driver modules 345 and 310) to the supermarket-management module 315 which correspondingly updates the respective field LOG of the  
20 customer database 325. The method then ends in the final step 495.

Similar considerations apply in the case where another equivalent method is used, error procedures or an escape function stopping execution of the various  
25 procedures are envisaged, the position of the products in

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the supermarket is defined by a different system of coordinates, or the shopping list is produced in a different manner. For example the products to be purchased are selected from a predefined list, are  
5 inserted into the shopping list by reading the respective bar-code from an empty packaging, and the shopping list is supplied directly to the host computer, with connection thereto being effected via the Internet from home by means of a normal desktop or laptop computer;  
10 alternatively, a preliminary list is produced automatically by the host computer on the basis of the products which are usually purchased by the customer; the customer completes the shopping list by simply erasing or adding products from/to this preliminary list.

15 More generally, the system according to the present invention is used for making purchases by a customer at a shopping centre of the self-service type; the system comprises means for storing the position of each product on sale in the centre, means for providing a shopping  
20 list of products to be purchased, means for determining the position of each product to be purchased and means for providing the customer with an indication of the products to be purchased in an ordered sequence according to a path inside the centre.

25 The solution according to the present invention

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makes it extremely simple to locate, inside the centre, each product to be purchased as well as particular products which do not fall within a well-defined product category.

5        This allows the time required by the customer to carry out his shopping to be reduced drastically since the path followed by the customer inside the centre is optimized. Moreover, the solution described above avoids the situation where the customer forgets and therefore  
10 does not purchase a certain product.

The structure according to the invention also overcomes one of the main obstacles which prevent new customers from using the centre.

The particular embodiment of the present invention,  
15 as described above, offers further advantages. For example, the use of the palm-top computer which displays the name and the coordinate, inside the supermarket, of each product to be purchased is extremely efficient and flexible.

20        The generation of the ordered shopping list and subsequent sending thereof to the palm-top computer by the host computer of the supermarket reduces to a minimum the need for data transmission between the two computers and the processing power which is required of the palm-  
25 top computer.

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The fact that the palm-top computer displays in succession the information relating to each product to be purchased in response to various forward commands supplied by the customer (product purchased, erased or on  
5 hold) allows the customer to focus his/her attention on a single product at a time.

Moreover, the bar-code reader incorporated in the palm-top computer allows all the information relating to the products chosen by the user to be acquired in a rapid  
10 and precise manner.

Similar considerations apply in the case where the palm-top computer is removed from a rack at the supermarket entrance, with insertion of a magnetic card on which identification details of the client are stored,  
15 or the palm-top computer is replaced by a personal organizer, by a cellular phone (operating for example using a WAP or UTMS protocol) or by any other portable processing device, or the palm-top computer and the supermarket host computer communicate with each other in  
20 a different way (for example by means of a cable connection activated exclusively before the customer enters the supermarket) or the forward command is supplied by the customer in a different way (for example only via the keyboard, without the possibility of putting  
25 the current product on hold), and the like.

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The system according to the present invention in any case may also be implemented by supplying the customer with different information for each product to be purchased (even only the name), without using any  
5 portable device (for example by providing the ordered shopping list printed on paper), without producing any ordered shopping list (sending the information relating to the products to be purchased from the host computer to the palm-top computer in an interactive manner), without  
10 using any forward command (displaying the entire ordered shopping list in a window on the palm-top computer using an associated scroll bar), or without any bar-code reader (simply confirming purchase of the product chosen via the keyboard of the palm-top computer).

15 In the preferred embodiment of the present invention described above, the palm-top computer also displays any special offer associated with the current product to be purchased. This allows a very effective advertising campaign to be carried out precisely at the crucial  
20 moment when the customer is purchasing the product.

Displaying the amount saved on the palm-top computer makes shopping more enjoyable for the customer and is an excellent stimulus for increasing the number of purchases.

25 By means of the list of special offers, together

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with the associated products recommended to the customer on the basis of his/her personal details, it is possible to perform advertising which is specifically targeted at each customer.

- 5        In this case also, the fact of displaying the information relating to each recommended product when the customer is in the vicinity of the corresponding position further increases the effectiveness of the advertising.

10       Finally, the signalling lamps (which can be selectively activated by means of the palm-top computer) constitute a means which facilitates even further the location, inside the supermarket, of each product to be purchased.

15       Similar considerations apply in the case where the special offers are displayed in a different way (for example in a separate window on the palm-top computer), or the recommended products are determined in another manner (for example only on the basis of the products which are usually purchased or only on the basis of the  
20       personal details of the customer), or the position of the portable device is detected by means of a different system of sensors, or the signalling lamps are arranged on each level of the shelving or are replaced by acoustic warning devices, and the like.

25       The system according to the present invention may in

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any case also be implemented without displaying either the special offers or the amount saved, displaying the information relating to the recommended products independently of the customer's position or even without  
5 producing any list of recommended products and without any signalling device.

Alternatively, only some of these functions (or even none of them) or functions of another type are envisaged, such as the displaying of a number of loyalty points  
10 accumulated by the user and the corresponding prizes reached, the transmission of short advertising messages to the palm-top computer (if necessary of the type personalized for the customer), the possibility of paying for the purchases automatically (on the basis of the  
15 information collected by the palm-top computer), and the like. Conversely, these additional functions may be used (separately or in combination with each other) also without the above mentioned function of indicating the products to the purchased in an ordered sequence  
20 according to the path inside the supermarket.

Obviously a person skilled in the art, in order to satisfy contingent and specific requirements, may make numerous modifications and variations to the solution described above, all of which moreover are contained  
25 within the scope of protection of the invention as

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defined by the following claims.

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## CLAIMS

1. System (100) for making purchases by a customer at a shopping centre of the self-service type (105), comprising means (330) for storing the position of each product on sale in the centre, means (135) for providing a shopping list of products to be purchased, characterized in that the system further comprises means (320) for determining the position of each product to be purchased and means (135) for providing the customer with an indication of the products to be purchased in an ordered sequence according to a path (120) inside the centre.
2. System (100) according to Claim 1, wherein the means for providing the customer with an indication of the products to be purchased include a portable processing device (135) having means (275) for displaying a name and a coordinate, inside the centre, of each product to be purchased.
3. System (100) according to Claim 2, wherein the means (330) for storing the position of each product on sale and the means (320) for determining the position of each product to be purchased include a computer of the centre (130), the computer further comprising means (320) for producing an ordered shopping list according to the path and comprising, for each product to be purchased,

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the corresponding name and the corresponding coordinate, and wherein the system comprises means for communication (310,345) between the computer and the portable device, the ordered shopping list being sent from the computer to  
5 the portable device.

4. System (100) according to Claim 2 or 3, wherein the portable device comprises means (365-375,385) for displaying in succession the indication of each current product to be purchased in response to a forward command.

10 5. System (100) according to Claim 4, wherein the portable device includes a bar-code reader (290) for producing the forward command in response to the reading of a bar-code for the current product to be purchased, chosen by the user.

15 6. System (100) according to Claim 4 or 5, wherein the computer comprises means (330) for storing a possible special offer associated with each product on sale and means (320) for adding the corresponding special offer to each product to be purchased in the ordered shopping  
20 list, the portable device further displaying the special offer corresponding to the current product to be purchased.

7. System (100) according to Claim 6, wherein the special offer includes a discount applied to a price of  
25 the product on sale and wherein the portable device

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comprises means (365,380) for determining an amount saved equal to the sum of the discounts corresponding to the products to be purchased chosen by the user, the portable device further displaying the amount saved.

5        8. System (100) according to any one of Claims 1 to 7, wherein the computer comprises means (325) for storing information relating to the customer and means (320,325) for producing an additional list containing an indication of recommended products depending on the  
10 information relating to the customer, the additional list being sent to the portable device and the portable device further displaying the indication of the additional products.

9. System (100) according to Claim 8, wherein the  
15 additional list includes, for each recommended product, the corresponding name and the corresponding coordinate and wherein the system further comprises means (119,345) for detecting a position of the portable device, the portable device displaying the indication and the  
20 coordinate of the recommended product when the portable device is in the vicinity of the corresponding position.

10. System (100) according to any one of Claims 1 to 9, further comprising signalling means (118) for indicating a zone in which the current product to be  
25 purchased is located, the portable device comprising

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means (285) for selectively activating the signalling means.

11. Method (400) for making purchases by a customer at a shopping centre of the self-service type, comprising  
5 the steps of:

storing a position of each product on sale in the centre,

providing (410-420) a shopping list of products to be purchased,

10 characterized by the steps of

determining (425) the position of each product to be purchased, and

supplying (450) the customer with an indication of the products to be purchased in an ordered sequence  
15 according to a path inside the centre.

12. Method (400) for making purchases by a customer at a shopping centre of the self-service type, comprising, under the control of a computer of the centre in which the position of each product on sale in the  
20 centre is stored, the steps of:

receiving (420) a shopping list of products to be purchased,

determining (425) the position of each product to be purchased, and

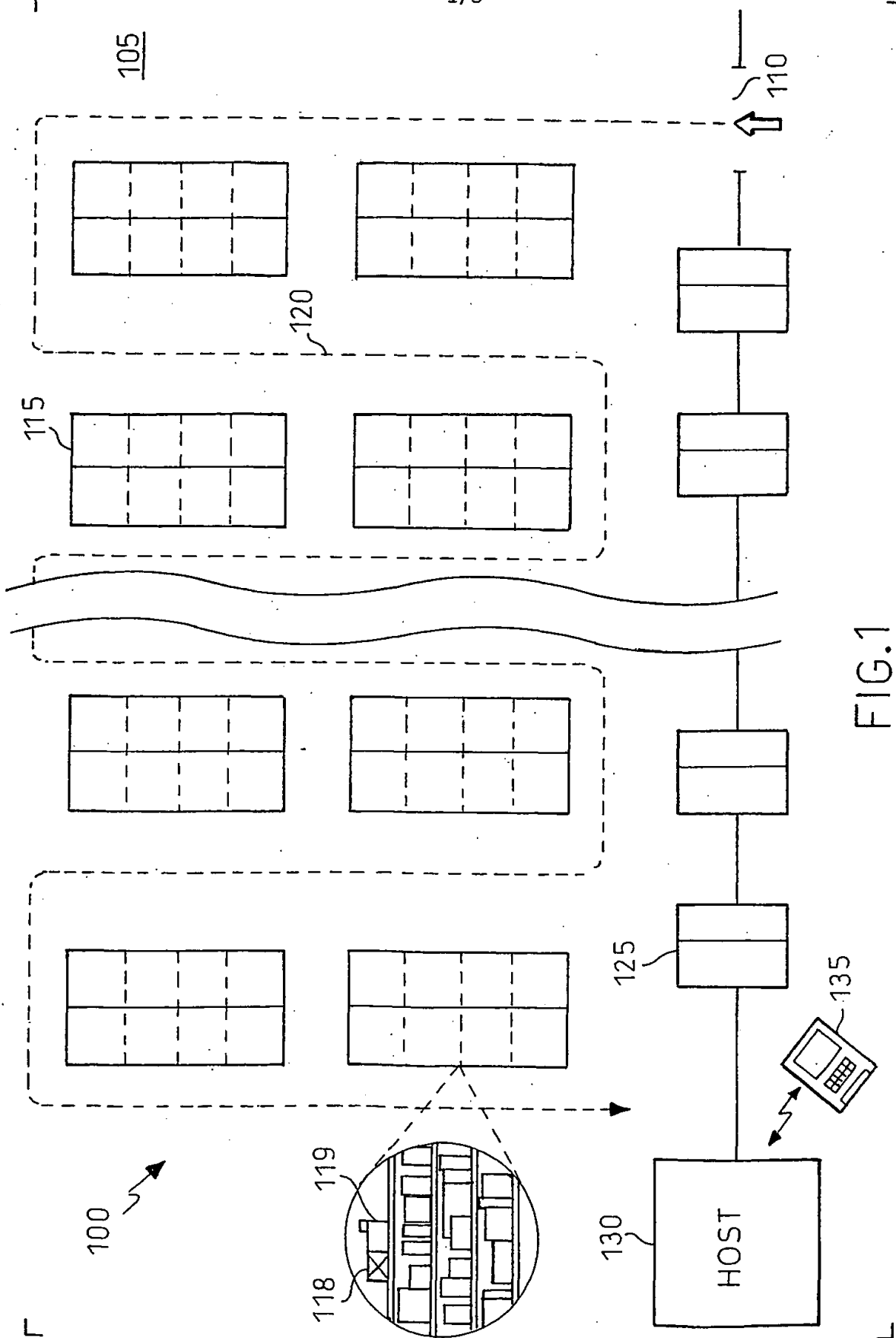
25 providing (450) the customer with an indication of

- 28 -

the products to be purchased in an ordered sequence according to a path inside the centre.

13. Computer program (320) directly loadable into a working memory of the computer of the centre for  
5 performing the method of claim 12 when the program is run on the computer of the centre.

14. Program product comprising a computer readable medium (235) on which the program of Claim 13 is stored.



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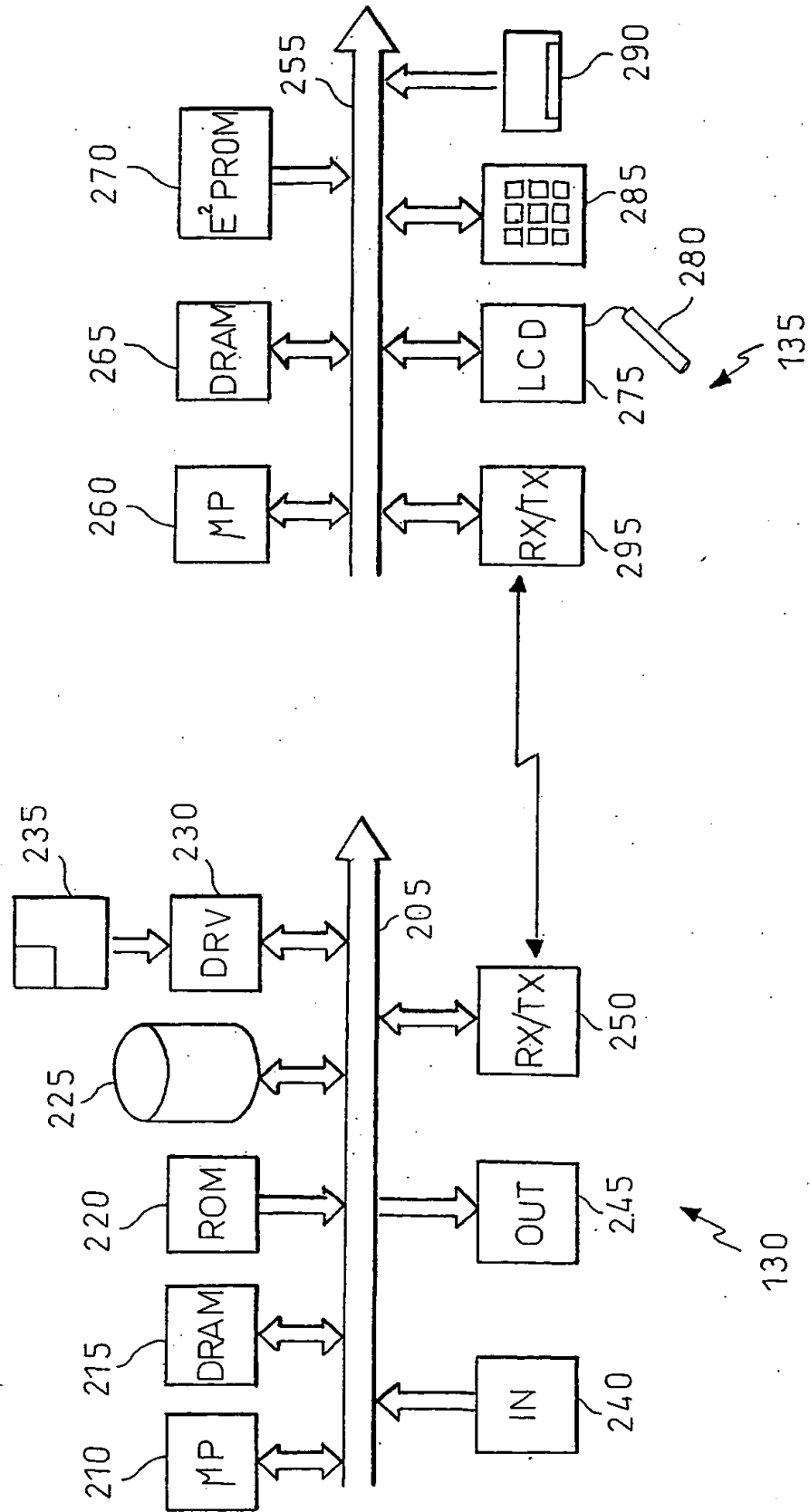


FIG. 2

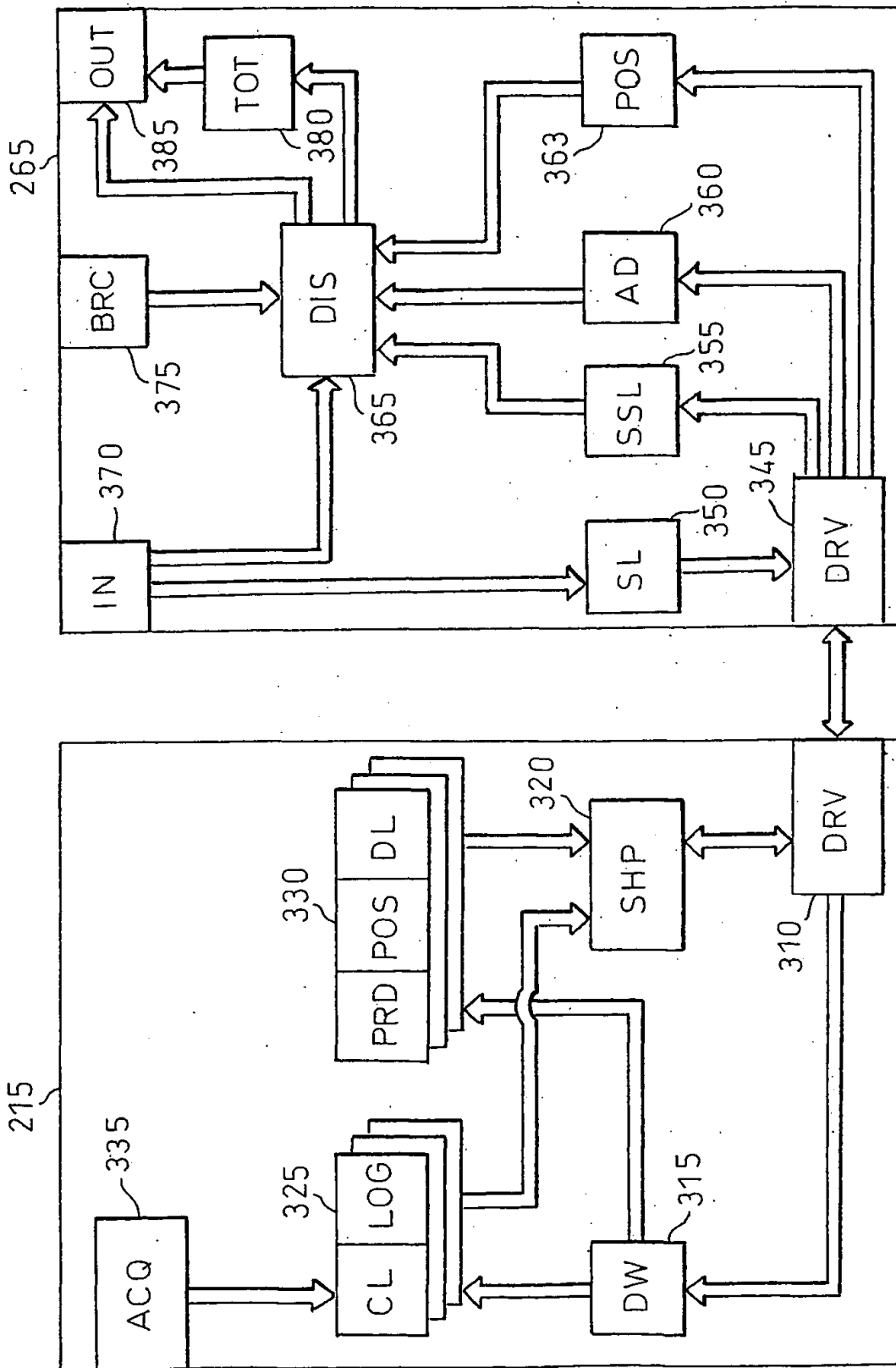


FIG. 3

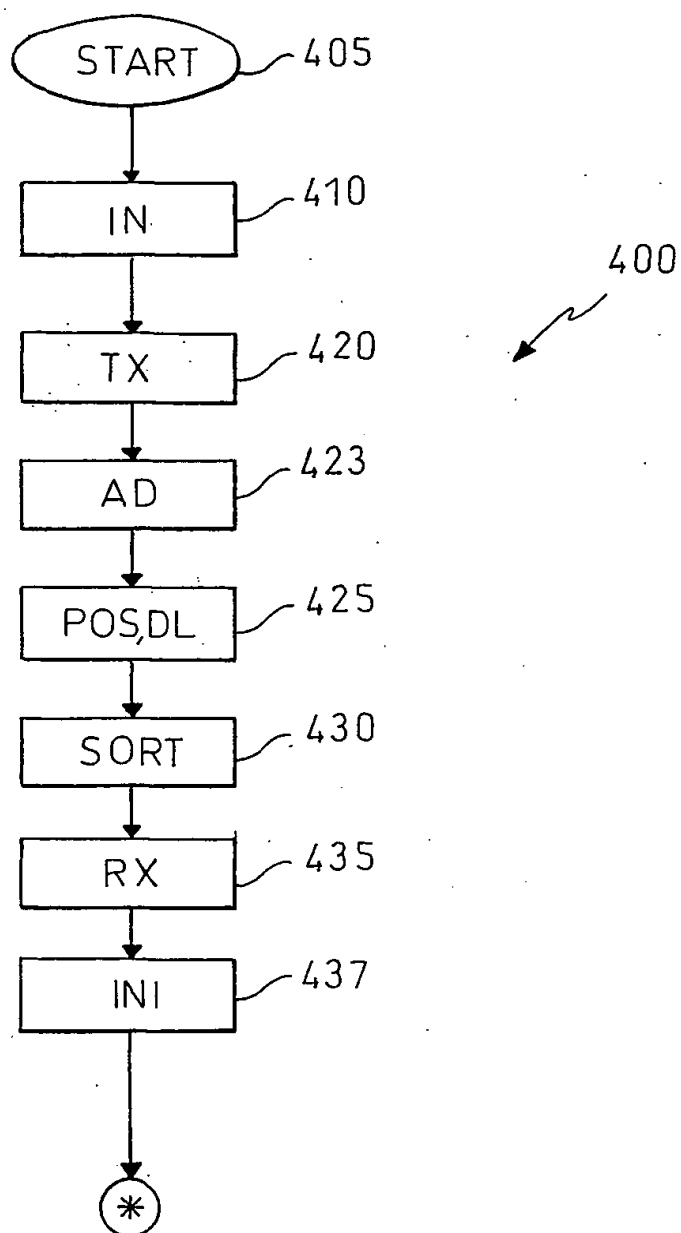


FIG. 4a

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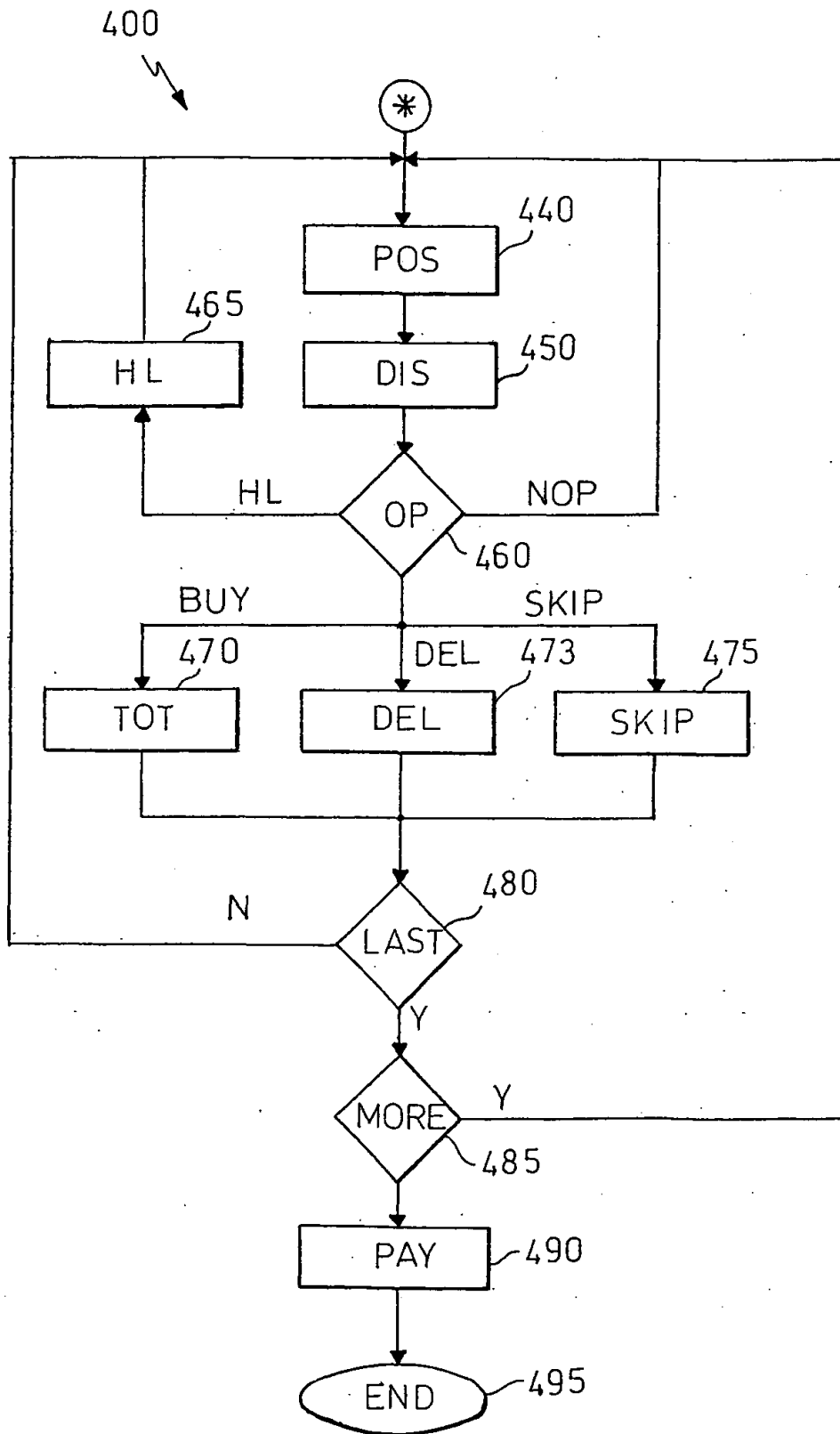


FIG. 4b

# INTERNATIONAL SEARCH REPORT

International Application No

PCT. . . J0/00304

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 7 G06F17/60 A47F10/02		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) IPC 7 G06F A47F		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) WPI Data, INSPEC		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 882 724 A (VELA LEO ET AL) 21 November 1989 (1989-11-21) abstract; figures 1-3,12-18	1-4, 10-14
Y	column 1, line 11 -column 2, line 12 column 2, line 15 -column 3, line 61 column 12, line 5 - line 59 column 16, line 36 - line 60 column 25, line 5 -column 26, line 33 column 36, line 61 -column 40, line 48	5-9
Y	US 5 287 266 A (MALEC JOHN ET AL) 15 February 1994 (1994-02-15) figures 9A,9B,10 column 1, line 53 -column 2, line 44 column 21, line 48 - line 54 column 22, line 29 - line 42 --- -/--	5
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.		
* Special categories of cited documents : *A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art *G* document member of the same patent family		
Date of the actual completion of the international search 19 June 2001		Date of mailing of the international search report 04/07/2001
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer Corcoran, P

# INTERNATIONAL SEARCH REPORT

International Application No

PCT. . . 00/00304

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>ASTHANA A ET AL: "An indoor wireless system for personalized shopping assistance"</p> <p>PROCEEDINGS. WORKSHOP ON MOBILE COMPUTING SYSTEMS AND APPLICATIONS (CAT. NO.94TH06734), WORKSHOP ON MOBILE COMPUTING SYSTEMS AND APPLICATIONS, SANTA CRUZ, CA, USA, 8-9 DEC. 1994, pages 69-74, XP002170013</p> <p>1995, Los Alamitos, CA, USA, IEEE Comput. Soc. Press, USA</p> <p>ISBN: 0-8186-6345-6</p> <p>* 1. Introduction p.69-70 *</p> <p>* 2.1 PSA p.70-71 *</p> <p>* 2.2 PSA Server p.71-72 *</p> <p>* 3. Service Scenarios p.72-73 *</p>	6-9
A	<p>FR 2 596 902 A (CHETOCHINE GEORGES)</p> <p>9 October 1987 (1987-10-09)</p> <p>abstract</p>	1-14

# INTERNATIONAL SEARCH REPORT

ation on patent family members

International Application No

PCT, .. 00/00304

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4882724 A	21-11-1989	AU 2626088 A CA 1317347 A CA 1332848 A WO 8903555 A US 5630068 A	02-05-1989 04-05-1993 01-11-1994 20-04-1989 13-05-1997
US 5287266 A	15-02-1994	US 4973952 A US 5295064 A AT 136378 T AU 636809 B AU 1098492 A AU 635169 B AU 1098592 A AU 633457 B AU 1098692 A AU 616917 B AU 2521588 A BR 8807216 A CA 1300235 A CA 1322577 A CA 1330367 A DE 3855178 D DE 3855178 T DK 246089 A EP 0335931 A FI 892436 A JP 2501237 T JP 2743340 B NO 891991 A WO 8902628 A	27-11-1990 15-03-1994 15-04-1996 06-05-1993 14-05-1992 11-03-1993 07-05-1992 28-01-1993 07-05-1992 14-11-1991 17-04-1989 17-10-1989 05-05-1992 28-09-1993 21-06-1994 09-05-1996 28-11-1996 19-05-1989 11-10-1989 19-05-1989 26-04-1990 22-04-1998 20-07-1989 23-03-1989
FR 2596902 A	09-10-1987	NONE	

**RICEVUTO**

7 FEB 2002

**PATENT COOPERATION TREATY**

**PCT**

From the INTERNATIONAL BUREAU

**NOTICE INFORMING THE APPLICANT OF THE  
COMMUNICATION OF THE INTERNATIONAL  
APPLICATION TO THE DESIGNATED OFFICES**

(PCT Rule 47.1(c), first sentence)

To:

PEZZOLI, Ennio  
Maccalli & Pezzoli S.r.l.  
Via Settembrini, 40  
I-20124 Milano  
ITALIE

Date of mailing (day/month/year) 31 January 2002 (31.01.02)		<b>IMPORTANT NOTICE</b>	
Applicant's or agent's file reference I01020-WO/EP(04)			
International application No. PCT/IT00/00304	International filing date (day/month/year) 20 July 2000 (20.07.00)	Priority date (day/month/year)	
Applicant ARTERICERCA S.A.S. DI UMBERTO AVANZI E C. et al			

1. Notice is hereby given that the International Bureau has **communicated**, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this notice:  
KP, KR, US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EA, EE, EP, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OA, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN,

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this notice is a copy of the international application as published by the International Bureau on 31 January 2002 (31.01.02) under No. WO 02/08977

**REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)**

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a **demand for international preliminary examination** must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination (at present, all PCT Contracting States are bound by Chapter II).

**REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))**

If the applicant wishes to proceed with the international application in the **national phase**, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and the PCT Applicant's Guide, Volume II.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer  J. Zahra
Facsimile No. (41-22) 740.14.35	Telephone No. (41-22) 338.91.11

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>I01020-WO/EP(04)</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/IT 00/ 00304</b>	International filing date (day/month/year) <b>20/07/2000</b>	(Earliest) Priority Date (day/month/year)
Applicant  <b>ARTERICERCA S.A.S. DI UMBERTO AVANZI E C. et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1  
☐ None of the figures.

## INTERNATIONAL SEARCH REPORT

International Application No

/IT 00/00304

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 G06F17/60 A47F10/02

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G06F A47F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, INSPEC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 882 724 A (VELA LEO ET AL) 21 November 1989 (1989-11-21) abstract; figures 1-3, 12-18	1-4, 10-14
Y	column 1, line 11 - column 2, line 12 column 2, line 15 - column 3, line 61 column 12, line 5 - line 59 column 16, line 36 - line 60 column 25, line 5 - column 26, line 33 column 36, line 61 - column 40, line 48 ---	5-9
Y	US 5 287 266 A (MALEC JOHN ET AL) 15 February 1994 (1994-02-15) figures 9A, 9B, 10 column 1, line 53 - column 2, line 44 column 21, line 48 - line 54 column 22, line 29 - line 42 --- -/--	5

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*G\* document member of the same patent family

Date of the actual completion of the international search

19 June 2001

Date of mailing of the international search report

04/07/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax: (+31-70) 340-3016

Authorized officer

Corcoran, P

## INTERNATIONAL SEARCH REPORT

International Application No

5/IT 00/00304

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>ASTHANA A ET AL: "An indoor wireless system for personalized shopping assistance" PROCEEDINGS. WORKSHOP ON MOBILE COMPUTING SYSTEMS AND APPLICATIONS (CAT. NO.94TH06734), WORKSHOP ON MOBILE COMPUTING SYSTEMS AND APPLICATIONS, SANTA CRUZ, CA, USA, 8-9 DEC. 1994, pages 69-74, XP002170013 1995, Los Alamitos, CA, USA, IEEE Comput. Soc. Press, USA ISBN: 0-8186-6345-6 * 1. Introduction p.69-70 * * 2.1 PSA p.70-71 * * 2.2 PSA Server p.71-72 * * 3. Service Scenarios p.72-73 * ---</p>	6-9
A	<p>FR 2 596 902 A (CHETOCHINE GEORGES) 9 October 1987 (1987-10-09) abstract -----</p>	1-14

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

/IT 00/00304

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4882724	A	21-11-1989	AU 2626088 A	02-05-1989
			CA 1317347 A	04-05-1993
			CA 1332848 A	01-11-1994
			WO 8903555 A	20-04-1989
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US 5287266	A	15-02-1994	US 4973952 A	27-11-1990
			US 5295064 A	15-03-1994
			AT 136378 T	15-04-1996
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			AU 635169 B	11-03-1993
			AU 1098592 A	07-05-1992
			AU 633457 B	28-01-1993
			AU 1098692 A	07-05-1992
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			FI 892436 A	19-05-1989
			JP 2501237 T	26-04-1990
			JP 2743340 B	22-04-1998
			NO 891991 A	20-07-1989
			WO 8902628 A	23-03-1989
<hr/>				
FR 2596902	A	09-10-1987	NONE	
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